

87977

S/049/60/000/010/012/014
E133/E414

**Measurements of the Ionized Constituents of the Atmosphere During
Anti-Cyclonic Conditions**

average distribution spectra for positive and negative ions at the heights where measurements were made (300 to 5000 m). The results obtained confirm those found in Ref.1. From these results correlations can be found between the characteristics of the ion spectra and some of the meteorological conditions. Thus, during an anti-cyclone, the number of light ions and the conductivity of the air both increase with height. When the relative humidity increases with height, the number of ions decreases or remains constant. There seems to be a slight tendency for the number of ions to vary with the vertical temperature gradient. In some cases, the number of ions does not increase monotonically with height but has a minimum at intermediate heights. It was found that, during the break-up of the anti-cyclone, the positive ion spectrum was different from the negative ion spectrum. The presence of two maxima in these curves is probably due to the presence of dust in the atmosphere. There are 10 figures and 4 Soviet references.

Card 2/3

87977

S/049/60/000/010/012/014
E133/E414

Measurements of the Ionized Constituents of the Atmosphere During
Anti-Cyclonic Conditions

ASSOCIATION: Akademiya nauk SSSR Institut prikladnoy geofiziki
(Academy of Sciences USSR Institute of Applied
Geophysics)

SUBMITTED: February 20, 1960

Card 3/3

32704
S/049/61/000/012/008/009
D207/D303

3,5131

AUTHORS: Komarov, N.N. , Kuz'menko, M.D. and Seredkin, A.A.

TITLE: A counter for atmospheric ions

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya geofizicheskaya, no. 12, 1961, 1875 - 1881

TEXT: The authors give design calculations and describe the construction of a portable counter which can be used for field work on atmospheric ions or for laboratory work in physical, medical and biological applications. The design calculations followed the formulae derived earlier by N.N. Komarov and A.A. Seredkin (Ref. 7: IZV. AN SSSR, ser. geofiz., no. 11, 1960). The counter consisted of 4 main parts: A blower, two measuring capacitors, a dynamic electrometer and a loop oscillograph. The blower was the usual ventilating fan with airspeed controlled by an anemometer; if stabilized mains supply was used, no control of airspeed was necessary. The two capacitors had separate air supplies but a common electrical screen. One capacitor was designed for heavy ions: it had an

Card 1/ 3

32704

S/049/61/000/012/008/009
D207/D303

A counter for ...

outer high-voltage cylindrical electrode, an inner cylindrical collector electrode connected to the electrometer, and a cylindrical guard ring, insulated from the collector electrode. The other capacitor was designed for light ions; it was similar to the heavy-ion capacitor but had a thinner collector electrode and no guard ring. The collector electrodes of the two capacitors were interchangeable. The heavy-ion capacitor could be used for heavy ions and for slow ions of medium mass; the light-ion capacitor was meant for light ions and for fast ions of medium mass. In this way the whole spectrum of ion masses and velocities could be covered by the counter. The electrometer, designed as ДЭ-3 (DE-3) was of the type described by H. Palevsky, R.K. Swank and R. Grenchik (Ref. 8; Rev. Sci. Instr., 18, 1947); its sensitivity was of the order of 10^4 scale divisions per volt. The complete counter could be used as (1) an ion spectrometer with collection of light ions by the guard ring in the heavy-ion capacitor, (2) an ion spectrometer of the type described by H. Isräel (Ref. 2; Gerl. Beitr. Geophys., 31, 1931; Atmosphärische Elektrizität. 1, Leipzig, 1957) when air is passed consecutively through the heavy-

Card 2/3

A counter for ...

32704
S/049/61/000/012/008/009
D207/D303

-ion and light-ion capacitor, (3) an ion spectrometer using the method of characteristics, described earlier by N.N. Komarov and A.A. Seredkin (Ref. 7: Op. cit.) The counter was tried successfully in atmospheric measurements on the ground and in aircraft, as well as in laboratory measurements. There are 6 figures and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Palevsky, R.K. Swank and R. Grenchik, Rev. Sci. Instr., 18 (1947) [Abstractor's note: The initials in this reference were quoted wrongly in the Russian original]

ASSOCIATION: Institut prikladnoy geofiziki, Akademiya nauk SSSR
(Institute of Applied Geophysics, Academy of Sciences, USSR)

SUBMITTED: July 14, 1960

Card 3/3

KUZ'MENKO, Mikhail Ivanovich; SIVAKOV, Arkadiy Rafailovich; GOL'DIN,
O.Ye., red.; ZHITNIKOVA, O.S., tekhn. red.

[Transistorized d.c. converters] Poluprovodnikovye preo-
brazovateli postoiannogo napriazheniia. Moskva, Gos. energ.
izd-vo, 1961. 134 p. (MIRA 15:3)
(Electric current converters)

KUZ'MENKO, M. S.

Dissertation: Physiological Investigation of the Water Balance and Wintering of Tea in the Crimea." Cand Biol Sci, Inst of Plant Physiology imeni K. A. Timiryazev, Acad Sci USSR, 26 May 54. Vechernyaya Moskva, Moscow, 17 May 54

SO: SUM 284, 26 Nov 1954

KUZ'NENKO, T. V.; SPIL'NENKO, T. M.

Poltava Province - Wheat.

New high-yield varieties of winter wheat for Poltava Province. Dist. sel'khoz.
No. 2, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

SAZONOV, I.V., kandidat sel'skokhozyaystvennykh nauk; KUZMENKO, M.V.

Agricultural measures in the spot planting of shelterbelts.
Zemledelie 4 no.11:119-121 N '56.

(MLRA 10:2)

1. Direktor Veselo-Podolyanskoy opytno-selektionnoy stantsii.
(Windbreaks, shelterbelts, etc.)

COUNTRY : USSR
 CATEGORY : Cultivated Plants. Grains. Leguminous Grains.
 Tropical Cereals.
 ABS. JOUR.: Ref Zhur-Biologiya, No. 5, 1959, No. 20 211
 Author : Kuz'menko, M.V.; Yefimenko, T.M.
 INST. : Kharkov University
 TITLE : Results of Winter Wheat Selection in
 Veselopodlyansk Selection Station.
 ORIG. PUB.: V. sb.: Vopr. metodiki selektsii pshenitsy
 i kukuruzy, Khar'kov, Un-t, 1957, 29-39
 ABSTRACT : During the last few years the varieties
 Veselopodolyanskaya 499 and Veselopodolyanskaya
 10 were bred which are resistant to leaf rust,
 to lodging and drought; in winter resistance
 they approach Lesostepka 75. In a comparative
 test on 11 plots in the years 1951-1955,
 Veselopodolyanskaya 449 yielded 29.7 to 45.3
 cwt/ha, surpassing Lesostepka by 5-10.8 cwt/ha.
 In 1955 on 6 variety plots it produced after
 black fallow 39.5-55 cwt/ha, on a cover and

CARD : 1/2

KUZ'MENKO, N.

Experiment station in the service of livestock raisers. Nauka
i pered.op. v sel'khoz. 7 no.8:10-11 '57. (MLRA 10:9)

1. Direktor Poltavskoy sel'skokhozyaystvennoy opytной stantsii.
(Poltava Province--Stock and stockbreeding)

KUZ'MENKO, M.V.

Conference on increasing the productivity of natural forage
lands and the production of crops rich in proteins. Ukr. bot.
zhur. 14 no.1:113-114 '57.

(Ukraine--Pastures and meadows)

(MLRA 10:5)

KUZ'MENKO, M. V., Candidate Agric Sci (diss) -- "Methods of selecting winter wheat at the Veselo-Podolyansk Experimental-Selection Station". Kiev, 1959. 17 pp (Min Agric Ukr SSR, Ukr Acad Agric Sci), 150 copies (KL, No 24, 1959, 145)

KUZ'MENKO, M.V.

LA

8

Chalcedony-like natrolite. M. V. Kuz'menko. Diss.

Izvestiya Akad. Nauk S.S.S.R. 72, 707-709 (1950). In intensely recrystallized pegmatites of alk. rocks, natrolite is observed in the usual prismatic habit, and in addition in dense, opal- or chalcedony-like aggregates. The d. is 2.247 and the hardness 5.5. Optical consts. and chem. compn. are identical with those of the ordinary natrolite (as 1.480-1.480); the dehydration curve and x-ray diagrams are also identical. The occurrence of chalcedony-like natrolite is typical for albite and hackmanite pegmatites in luyavrite, and on the contact of luyavite with poikilitic nepheline syenite, associated with much decompl. nephelinite and feldspar, aegirite, and alkali amphibole. The leucocratic minerals (+ bergmannite derived from hackmanite) are enriched in the central parts of the pegmatite veins. The chalcedony-like natrolite is evidently deposited from the same solns. as the prismatic natrolite, but at considerably lower temps., and rather suddenly crystallized. W. Eitel

CIA-RDP86-00513R000928010

CIA-RDP86-00513R0009280100

KUZ'MENKO, M. V.

USSR/Minerals

Card 1/1

Pub. 22 - 34/47

Authors : Kuz'menko, M. V., and Kazakova, M. E.

Title : Nenadkevichit - new mineral

Periodical : Dok. AN SSSR 100/6, 1159-1160, Feb 21, 1955

Abstract : The discovery of a new mineral of the alkali titanium and niobium silicate group is announced. The mineral was named "Nenadkevichit" in honor of the Soviet mineralogist-geochemist Konstantin Avtonomovich Nenadkevich, Member correspondent of the Academy of Sciences USSR. The formula of the new mineral is: $AB(Si_2O_7) \cdot 2H_2O$ where A = Na, K, Ca, TR, Mn, Ba, Mg; and B = Nb, Ti, Fe. Four references: 2 USSR, 1 German and 1 English (1890-1946). Tables.

Institution :

Presented by: Academician A. G. Betekhtin, December 16, 1954

KUZ'MENKO, M.V.

Classification and genesis of alkali pegmatites. Trudy Inst. min.
geokhim. i krista'llokhim. red. elem. no.1:138-154 '57.
(Lovozero tundras--Pegmatites) (MIRA 11:6)

VLASOV, Kuz'ma Alekseyevich; KUZ'MENKO, Mariya Vasil'yevna; YES'KOVA,
Yevdokiya Mikhaylovna; GERASIMOVSKIY, V.I., doktor geologo-
mineralogicheskikh nauk, otv.red.; GODOVIKOVA, L.A., red.izd-va;
MAKUMI, Ye.V., tekhn.red.; KASHINA, P.S., tekhn.red.

[Lovozero alkali massif; rocks, pegmatites, mineralogy, geo-
chemistry, and genesis] Lovozerskii shchelochnoi massiv; porody,
pegmatity, mineralogiia, geokhimiia i genezis. Moskva, Izd-vo
Akad.nauk SSSR, 1959. 623 p. (MIRA 12:12)
(Lovozero Tundras--Rocks, Igneous)

KUZ'MENKO, M.V.; KOZHANOV, S.I.

"Karnasurtit," a new mineral. Trudy Inst.min., geokhim.i kristalokhim.-
red.elem. no.2:95-98 '59. (MIRA 15:4)
(Minerals)

S/015/60/000/009/002/005
A052/A129

AUTHOR: Kuz'menko, M. V.

TITLE: Concerning the geochemistry of tantalum and niobium

PERIODICAL: Referativnyy zhurnal. Geologiya, 1960, no. 9, 178, abstract 16966
(Tr. In-t mineralogii, geokhimi i kristalloghmi. redk. elementov
AN SSSR, 1959, no. 3, 3 - 25)

TEXT: Ta and Nb are typical oxyphiles and in the processes of mineral formation they display a geochemical affinity to Fe, Mn, Ti, TR, U, Th, Zr, W, Sc, Bi, Sb, with which Ta and Nb form complex minerals or are contained in the minerals of these elements in the form of isomorphic admixtures. In the natural processes Ta and Nb accompany alkaline metals, in particular Na and Li. The similarity of crystallochemical and chemical properties of Ta, Nb and Ti cause an unlimited isomorphism of these elements in the processes of mineral formation and a constant presence of Ta and Nb in Ti minerals. In the course of evolution of magma the concentration of Ta and Nb increases from ultrabasic rocks to acid and further to alkali ones. Nb prevails definitely over Ta in all types of rocks. The relation of Nb to Ta changes from 5 in some granite agglomerates to 17 in basic and ultrabasic rocks. Nephelinic syenites occupy an intermediate position. In all

Card 1/2

Concerning the geochemistry of tantalum and niobium

S/015/60/000/009/002/005
A052/A129

natural processes, with the exception of the granitic pegmatitic one, Nb prevails definitely over Ta. In the acid (granitic) group of rocks Ta and Nb are associated closely to Fe, Mn and to a lesser extent to Bi, Sb, W, Sn. With these elements they form complex elements or are contained in their minerals. In the granosyenitic complex Ta and Nb form complex minerals with Ti and TR of the yttric subgroup, with U and to a lesser degree with Th. The concentration of Ta and Nb in granitic and granosyenitic complexes increases towards the end of the magmatic and pegmatitic process and then decreases towards the end of the pneumatolyto-hydrothermal process. The concentration of Ta and Nb in alkaline agglomerates depends on the magmatic crystallization differentiation. In well-differentiated agglomerates with a high Ta and Nb content the bulk of these elements separates out in the magmatic process, then in the pegmatitic and pneumatolyto-hydrothermal process. In this case their concentration decreases gradually. In the alkaline ultrabasic complex in the magmatic and pegmatitic processes Ta and Nb are contained in small quantities in Ti and Fe minerals. At the end of the pneumatolyto-hydrothermal process the concentration of Ta and Nb in solutions increases. In the ultrabasic complex Ta and Nb do not form their own minerals, but are bound in Ti and Fe minerals in the magmatic process.

[Abstracter's note: Complete translation]

Author's summary

Card 2/2

KUZMENKO, M. V.

31

PHASE I BOOK EXPLOITATION

857/5740

Akademiya nauk SSSR. Institut mineralogii, geokhimii i kristallogicheskikh redkikh elementov

Voprosy mineralogii, geokhimii i genezisa nastorozhdeniy redkikh elementov
(Problems in Mineralogy, Geochemistry, and Deposit Formation of Rare Elements)
Moscow, Izd-vo AN SSSR, 1960. 253 p. (Series: Its: Trudy, vyp. 4) Errata
printed on the inside of back cover. 2,200 copies printed.

Chief Ed.: K. A. Vlasov, Corresponding Member, Academy of Sciences USSR;
Resp. Ed.: V. V. Lyakhovich; Ed. of Publishing House: L. S. Tarasov;
Tech. Ed.: P. S. Kashina.

PURPOSE: This book is intended for geologists, mineralogists, and petrographers.

COVERAGE: This is a collection of 25 articles on the formation, geology,
mineralogy, petrography, and geochemistry of deposits of rare elements in
Siberia and [Soviet] Central Asia. The distribution and characteristics of
rare elements found in these areas as well as some quantitative and qualitat-
ive methods of investigating the rocks and minerals in which they are found,

Card 1/6

31

Problems in Mineralogy (Cont.)

ESI/5740

or with which they are associated, are discussed. Two articles present an economic investigation of the possibilities of industrial extraction and utilization of selenium, tellurium, and hafnium. No personalities are mentioned. Each article is accompanied by references.

TABLE OF CONTENTS:

GEOCHEMISTRY

Garmash, A. A. Peculiarities in the Distribution of Rare Elements in Polymetallic Deposits of the Zmeinogorsk Region of Rudnyy Altay	3
Semenov, Ye. I. On the Content of Lithium and Rubidium in Minerals of Alkaline Pegmatites of the Lovozerskiy Massif	20
Radalov, S. T., and S. Ruzantov. On the Geochemistry of Selenium and Tellurium in the Ore Deposits of Almalyk	24
Gorokhova, V. H. On the Content of Rhenium in Molybdenites of the Kadekharan Copper-Molybdenum Deposits	28

Card 2/6

21
31

Problems in Mineralogy (Cont.)

807/5740

MINERALOGY AND PETROGRAPHY

Yos'kova, Ye. M., and I. I. Bazarenko. Pyrochlore of the Vichnevyye Mountains, Its Paragenetic Associations, and the Peculiarities of Its Chemical Composition

33

Zhabin, A. G., G. N. Makhitdinov, and H. Ye. Kazakova. Paragenetic Associations of Accessory Minerals of Rare Elements in Exocontact Fenitized Kiascite Intrusive Rocks of the Vichnevyye Mountains

51

Zhabin, A. G. On the Separation Time of the Minerals Niobium, Zirconium, and the Rare Earths in the Granite Pegmatite of the Blyumovskaya Mine

74

Semenov, Ye. I. Goizirconium in Alkaline Pegmatites

85

Korkin, V. I., Yu. A. Pyatenko, and A. V. Bykova. On Britholite of the Alkaline Rocks of Southwestern Tuva

90

Card 3/6

Problems in Mineralogy (Cont.)

1957/5740

31

Iyakhovich, V. V., and A. D. Ghervinakaya. On the Character of the Distribution of Accessory Minerals in Granite Massifs

94

Iyakhovich, V. V., and V. I. Krasnoludova. On the Effect of Late Processes on the Content of Accessory Minerals in Granitoids

110

Ivanov, V. V., and O. Ye. Yushko-Zakharova. Discovery of Francolite in Yelmtiya

131

Kozlov, V. H., and A. V. Kostorin. X-ray Fluorescence from the Deposits of [Soviet] Central Asia

135

Kozlov, V. H. Crystallographic Forms of Calcite from the Galitskiye Deposits of Strontium in the Tadzhikistan [U.S.S.R.]

139

CHARACTER AND GENESIS OF THE DEPOSITS OF RARE MINERALS

Kozlov, V. H. Genetic Types of Deposits and Ore Manifestations of Niobium and Tantalum

142

Card 4/6

31

Problems in Mineralogy (Cont.)

507/5740

Zhmukova, A. B. On the Problem of Genetic Types of Cerium-Bearing Deposits

174

Tikhonenkov, I. P., and R. P. Tikhonenkova. Contact Rocks of the Lovozerskiy Massif, Their Genesis and the Peculiarities of Distribution in Them of Rare Metal Mineralization

185

Volochkovich, K. L. On the Problem of the Structural Position of the Gornoealtayskiy Rare Metal Province

203

METHODS OF INVESTIGATING ORES AND MINERALS

Letedava, S. I. Rational Method of Quantitative Determination of Disseminated Beryllium in Greisen Ores

209

Rodionov, D. A., S. F. Bobolov, B. P. Zolotarev, and Ye. V. Vlasova. On Accidental Errors of Quantitative Mineralogical Analysis of Ore Slimes and Concentrates

214

Card 5/6

31

Problems in Mineralogy (Cont.)

EST/5740

Leginova, L. A. Experiment in Measuring the Optical Constants of Germanite and Renierite

224

ECONOMICS OF RARE ELEMENTS

Leksin, V. N. Prospects in the Industrial Extraction of Selenium and Tellurium From the Products of Copper-Molybdenum Ore Processing

235

Kaganovich, S. Ya. Hafnium (Economic Survey)

246

AVAILABLE: Library of Congress

Card 6/6

JA/Am/mms
11-14-61

KUZ'MENKO, M.V.

Role of micas in the process of tantalum concentration. Dokl. AN
SSSR 140 no.6:1411-1414 0 '61. (MIRA 14:11)

1. Institut mineralogii, geokhimii i kristalloghimii redkikh elemen-
tov AN SSSR. Predstavleno akademikom D.I.Shcherbakovym.
(Tantalum) (Mica)

KUZ'MENKO, M.V.

Distribution of tantalum and niobium in slightly differentiated
rare-metal granite pegmatites and their genetic characteristics.
Trudy IMGRE no. 163/1975 '81. (MIRA 16:8)

KUZ'MENKO, M.V.; AKELIN, N.A.; SERDYUCHENKO, D.P., doktor
geol.-miner. nauk, prof., otv. red.

[Genesis of subalkaline granitoids and albitites connected with them and the distribution of tantalum and niobium in them] Genezis subshchelochnykh granitoidov i svyazannykh s nimi al'bitov i zakonomernosti raspredeleniia v nikh tantala i niobiia. Moskva, Naika, 1965.
119 p.
(MIRA 18:6)

KUZ'NENKO, N. I. in A. V. G. Stavke

Creators of small arms. Toki. 1 vol. 1977. 174 p.
(MIA 17:9)

KUZ'MENKO, N.D.

Peribronchitis in children. Ped., akush. i gin. 20 no.5:24-27 '58.

(MIRA 13:1)

1. Klinika fakul'tetskoy pediatrii (zav. kafedroy - prof. V.G. Balaban)
Kiyevskogo ordena Trudovogo Krasnogo Znameni meditsinskogo instituta
im. akad. A.A. Bogomol'tsa (direktor - dots. I.P. Alekseyenko).

(BRONCHITIS)

TOLOGHKOV, M., polkovnik; KUZ'MENKO, N., general-mayor tankovykh voysk;
DVORTSOV, F., podpolkovnik; KOVALEV, F., podpolkovnik; KOLESHNIKOV, I.,
gvardii general-mayor; ROMANOV, M., polkovnik; KALINOVSKIY, V.,
polkovnik; BOZHKO, I., podpolkovnik; PAVLOVICH, A., podpolkovnik

We discuss projects of new general Army regulations. Voen. vest.
38 no. 8:2-10 Ag '58. (MIRA 11:7)
(Russia--Army--Regulations)

5(4)

AUTHORS:

Sumarokova, T., Omarova, R., Kuz'menko, N.

SCV/79-29-5-6/75

TITLE:

On the Interaction of Tin Chloride With Esters. 2. (O vzaimodeyst-vii khlornogo olova so slozhnymi efirami. 2.)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 5,
pp 1437 - 1442 (USSR)

ABSTRACT:

In the present paper the influence exercised by the length of the aliphatic alcohol radical upon the acid-basic properties of esters was investigated. Viscosity, density and electric conductivity of the systems $\text{SnCl}_4 - \text{CH}_3\text{COOC}_8\text{H}_{17}$ and $\text{SnCl}_4 - \text{CH}_3\text{COOC}_{16}\text{H}_{33}$ were investigated. The results obtained on the determination of the properties as well as the calculated temperature coefficients of the electric conductivity, the corrected conductivity and the constant B for the system $\text{SnCl}_4 - \text{CH}_3\text{COOC}_8\text{H}_{17}$ which was investigated at 25 and 50°, are given in table 1. In figure 1 the diagrams ~~property~~ - composition are presented. By physico-chemical analysis it could be concluded that the components of the system react with one another, thus forming a complex compound $\text{SnCl}_4 \cdot 2\text{CH}_3\text{COOC}_8\text{H}_{17}$. The system $\text{SnCl}_4 - \text{CH}_3\text{COOC}_{16}\text{H}_{33}$ was in-

Card 1/3

On the Interaction of Tin Chloride With Esters. 2.

SOV/79-29-5-6/75

vestigated at 40, 50, 60 and 70°. The determination results are listed in tables 2 and 3, the calculated values of the corrected electric conductivity, the temperature coefficient of the conductivity and the constant B in table 4. The diagrams property - composition can be seen in figure 2. On the strength of the physico-chemical analysis it could be concluded that a complex compound $\text{SnCl}_4 \cdot 2\text{CH}_3\text{COOC}_{16}\text{H}_{33}$ is formed in the system. It was separated in free state. Its melting point is 56°. The electric conductivity in the system indicates the existence of this compound. Figure 3 compares the values of the electric conductivity at 50° in the systems $\text{SnCl}_4 - \text{CH}_3\text{COOC}_2\text{H}_5$ (Ref 4), $\text{SnCl}_4 - \text{CH}_3\text{COOC}_8\text{H}_{17}$ and $\text{SnCl}_4 - \text{CH}_3\text{COOC}_{16}\text{H}_{33}$. The value of the corrected conductivity of cetyl acetate solutions is seen to be far smaller than in octyl acetate and especially ethyl acetate solutions. This can be explained by the fact that the formation of the complex compounds $\text{SnCl}_4 \cdot 3\text{RCOOR}'$ is a secondary redox reaction. It proceeds via the stage of the formation of complex acids $\text{SnCl}_4 \cdot 2\text{RCOOR}'$ which become weaker on lengthening

Card 2/3

On the Interaction of Tin Chloride With Esters. 2.

SOV/79-29-5-6/75

of the radical. A similar rule was found in the systems formed from tin chloride and carboxylic acids (Refs 16,17). There are 3 figures, 4 tables, and 17 references, 13 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR
(Institute of Chemical Sciences of the Academy of Sciences,
Kazakhskaya SSR)

SUBMITTED: April 18, 1958

Card 3/3

KUZ'MENKO, N.D.; aspirant

Diagnostic significance of the antistreptolysin reaction in tonsillitis and rheumatic diseases. Ped., akush. i gin. 22 no.6:7-9 '60.
(MIRA 14:10)

1. Kafedra fakul'tetskoy pediatrii (zaveduyushchiy - prof. V.G. Balaban [Balaban, V.H.] Kiyevskogo ordena Trudvogo Krasnogo Znameni meditsinskogo instituta im.akad. Bogomol'tsa (direktor - dotsent I.P.Alekseyenko [Aleksislenko, I.P.]).
(TONSILS--DISEASES) (RHEUMATIC FEVER)
(ANTISTREPTOLYSINS)

MOSHCHICH, P.S., kand.med.nauk; KUZ'MENKO, N.D., aspirant; BLINKMAN, R.S.,
starshiy laborant

Serological indexes (antistreptolysin-O titer, antistreptohyaluronidase
and C-reactive protein) ~~in~~ ~~rheumatic~~ fever and chronic tonsillitis
in children. Vop. okh. mat. i det. 6 no.5:38-43 38-43 My '61.

(MIRA 14:10)

1. Iz kafedry fakul'tetskoy pediatrii (zaveduyushchiy - prof. V.G.
Balaban) Kiyevskogo ordena Trudovogo Krasnogo Znameni meditsinskogo
instituta imeni akad. A.A.Bogomol'tsa (direktor - dotsent V.D.Bratus').

(RHEUMATIC FEVER)

(TONSILS--DISEASE)

(ANTIGENS AND ANTIBODIES)

(BLOOD PROTEINS)

BEZNGS, A.M., inzh.; KULAKOVSKIY, V.A., inzh.; KUZ'MENKO, N.G.

Self-propelled drop hammer for knocking out accretions. Mekh.1
avtom.proizv. 17 no.11:26-27 N '63. (MIRA 17:4)

GNEDOV, N.P.; KUZ'MENKO, N.K.; SKLYAR, P.T.

Determination of coal quality. Standardizatsiia 28 no.3:
28-31 Mr'64. (MIRA 17:5)

KUZ'MENKO, N.M.

Hydrochemical characteristics and regionalization of rivers
and temporary currents of water in the Crimea. Gidrobiol.
zhur. 1 no.2:15-21 '65.

(MIRA 18:6)

1. Institut gidrobiologii AN UkrSSR, Kiyev.

L 10346-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6031596 SOURCE CODE: UR/0226/66/000/008/0055/0060

AUTHOR: Zagryazhskiy, V. L.; Shtol'ts, A. K.; Gel'd, P. V.; Kuz'menko, N. V. 30

ORG: Ural Polytechnic Institute im. S. M. Kirov (Ural'skiy politekhnicheskii institut)

TITLE: Phase diagram of the chromium-germanium system

SOURCE: Poroshkovaya metallurgiya, no. 8, 1966, 55-60

TOPIC TAGS: chromium germanium system, chromium germanium alloy, alloy phase diagram, alloy phase composition, alloy structure, alloy system, chromium base alloy, germanium containing alloy

ABSTRACT: A phase diagram of the chromium-germanium system (see Fig. 1) has been plotted on the basis of data obtained by physicochemical analysis of about 50 alloys containing from 0 to 100 at.% chromium. Alloys were melted from 99.98%-pure electrolytic chromium and 99.99%-pure single-crystal germanium. Five intermetallic compounds were identified: $\text{Cr}_{11}\text{Ga}_{19}$, CrGa , $\text{Cr}_{11}\text{Ge}_8$, Cr_5Ge_3 , and Cr_3Ge . The first four compounds are formed at 955, 1025, 1160 and 1250°C respectively; the last one melts

Card 1/2

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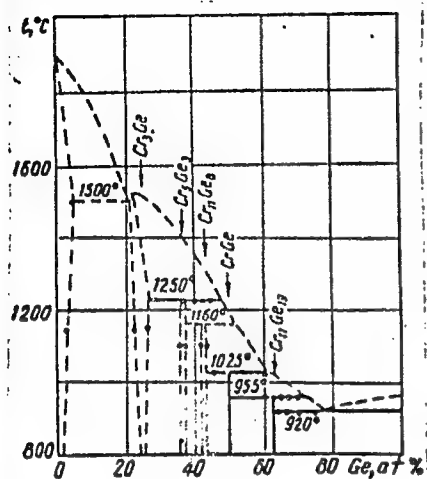


Fig. 1. Phase diagram of the chromium-germanium system

congruently. The alloy with 22 at% germanium has the highest melting point. Orig. art. has: 3 figures. [TD]

SUB CODE: 11/ SUBM DATE: 14Apr66/ ORIG REF: 005/ OTH REF: 005

KUZ'MENKO, N.V.

Thermal sensitivity of the Chinese oak silkworm embryo at various stages of embryogeny. Dop. AN URSR no.9:1248-1250 '62. (MIRA 18:4)

1. Institut zoologii AN UkrSSR.

KARLASH, Yo.V.[Karlash, K.V.]; KUZ'MENKO, N.V.

Development of wintering pupae of the pernyi moth under
different temperature and light conditions. Pratsi Inst.
zool. AN URSS 16:74-80 '60. (MIRA 13:7)
(Silkworms)

KUZ'MENKO, N.V.

Sensitivity of the embryos of the Chinese tussah moth to the action of low temperature at different stages of the development. Vop. ekol. 7:91-92 '62. (MIRA 16:5)

1. Institut zoologii AN UkrSSR, Kiyev.
(Moths) (Temperature--Physiological effect)

UMIDOVA, Z.I., prof.; KUZ'MENKO, O.A.

Changes in the cholesterol and lecithin content in the blood of patients with atherosclerosis according to the stages of the disease. Sbor.nauch.trud.TashGMI 22:36-43 '62.

(MIRA 18:10)

1. Kafedra gospi'tal'noy terapii (zav. kafedroy - prof. Z.I.Umidova)
Tashkentskogo gosudarstvennogo meditsinskogo instituta.

GLADIKH, L.I.; KUZ'MENKO, O.G.; FUKS, M. Ya.

Comparing the results of investigation of powder specimens by
the methods of approximation and harmonic analysis. Zav. lab.
30 no.6:712-716 '64 (MIRA 17:8)

1. Khar'kovskiy politekhnicheskii institut imeni V.I. Lenina.

KUZ'MENKO, O.M., ordinator

New developments in treating residual symptoms in poliomyelitis. Ped.,
akush. i gin. 19 no.4:14-17 '57. (MIRA 13:1)

1. Kafedra detskoy nevrologii (zav. - dots. I.F. Kononenko) Khar'-
kovskogo gosudarstvennogo meditsinskogo instituta (direktor - dots.
I.F. Kononenko).

(POLIOMYELITIS)

KUZ'MENKO, O. M.: Master Med Sci (diss) -- "The treatment and dispensary service of children suffering the effects of past poliomyelitis living in Khar'kov Oblast". Khar'kov, 1959. 16 pp (Khar'kov State Med Inst), 200 copies (KL, No 12, 1959, 132)

KUZ'MENKO, P.A.

Replacing the baffle plates in a slurry thickener with chains.
TSement 27 no.4:26-27 J1-Ag '61. (MIRA 14:8)

1. Stalinabadskiy tsementno-shifernyy kombinat.
(Cement plants--Equipment and supplies)

Kuz'menko, P. G.

137-58-3-5304

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 3, p 120 (USSR)

AUTHORS: Avramov, F. P., Kuz'menko, P. G.

TITLE: Employment of Welding to Build up the Working Surfaces of Stamping Dies Employed in Hot and Cold Forging of Metal
(Naplavka rabochikh chastey shtampov, primenyayemykh dlya goryachey i kholodnoy obrabotki metalla)

PERIODICAL: Vestn tekhn. inform. M-vo trakt. i s.-kh. mashinostr. SSSR, 1957, Nr 5, pp 6-7

ABSTRACT: The "Serp i Molot" (Hammer and Sickle) plant in Khar'kov adopted a method of employing arc welding for the purposes of building up worn out working sections of dies made of steels 5KhV, 5KhNT, and U8, as well as for the manufacture of new dies of steel 45. Electrodes composed of a core of 18Kh14A and 4Kh13 steel covered with a coating of the UONII-13/55 type were employed in the bead welding. The technology of manufacture of electrodes and the preparation of dies for bead welding operations is given together with a description of the procedure required for this process. Prior to welding the components are heated to 200-250°.

V. M.

Card 1/1

137-58-6-12689

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 215 (USSR)

AUTHORS: Avramov, F.P., Kuz'menko, P.G.

TITLE: Facing Tools with the Hard Alloy "Sormite" on a High-frequency Equipment (Naplavka instrumenta tverdym splavom "sormayt" na ustanovke tokov vysokoy chastoty)

PERIODICAL: Vestn. tekhn. inform. Tsentr. byuro tekhn. inform. trakt. i s.-kh. mashinostr., 1957, Nr 6, pp 13-15

ABSTRACT: The cast hard alloy, sormite, is a desirable facing for production equipment (tools and fixture parts) of high-carbon or alloy tool steel having low wear resistance. The oxyacetylene-flame and arc facing methods now in use suffer a number of serious shortcomings. A more advanced method is facing by means of the GZ-46 tube-type high-frequency oscillator as introduced at the Khar'kov "Serp i molot" Plant. Sormite facing with this equipment has the following advantages: higher rate of output and improved working conditions; absence of deformation of the tool thanks to the fact that the area subjected to heating is small; the seam is more dense and homogeneous, as this method eliminates any possible access

Card 1/2

137-58-6-12689

Facing Tools with the Hard Alloy "Sormite" on a High-frequency Equipment

of impurities; the burning off of the alloying elements is considerably reduced; and there is no need for any special electrodes. A description of this method of facing is offered. Heating procedures for structural steel parts are recommended.

V.B.

1. Cutting tools--Hardening
- Applications
2. Surfaces--Materials
3. High frequency heating

Card 2/2

30(1)

AUTHORS:

Kuz'menkov, P.N. (Chausskiy Rayon, Mogilev Oblast);
Sapozhkov, I.A. (Zagoryanskaya, Moscow Oblast)

SOV/26-59-2-49/53

TITLE:

Is This Fruiting Continuous (Bespreryvnoye li eto plodonosheniye?)

PERIODICAL:

Priroda, 1959, Nr 2, pp 123-124 (USSR)

ABSTRACT:

A reader's question on continuous fruiting in apple trees he had replanted and on the possible exhaustion of the trees concerned is answered and explained. Autumn flowering and fruiting was stimulated by the damage the root system had suffered during the replanting action. Since the tree tops had not been adjusted to the new extent of the root system, the situation was aggravated, because the correct root system - tree top ratio was disturbed. This disturbed ratio results in little to no accretion and small fruits. In conclusion, several apple tree species are mentioned which are considered to be of special value to Soviet fruit tree growers, among them trees that bear fruit up to 3 times within a growing season. It is pointed out that true continuous fruiting is

Card 1/2

Is This Fruiting Continuous

SOV/26-59-2-49/53

found only in such trees which never shed their leaves, such as the lemon.

ASSOCIATION: Gorbovichskaya srednyaya shkola (Gorbovichskaya Secondary School) Pl. Zagoryanskaya, Moskovskoy obl. (Zagoryanskaya Plantation of the Moscow Oblast')

Card 2/2

1ST AND 3RD LETTER																										2ND LETTER										3RD AND 4TH LETTER										5TH GROUP									
AUTHOR INDEX																																														MATERIALS INDEX									
<p><i>R</i></p> <p>Kut'menko, P. P. Dry pressing in the refractory industry. <i>Trudy Vsesoyuz. Nauchno. Issled. Inst. Keram. Prom.</i>, 1972, 2 (1) 66-72 (1045). Results are given on the production of grog ware by the dry pressing method with Boyd presses, using Chasov-Yar clays. See <i>Ceram. Abstracts</i>, 12 (3) 112 (1973).</p>																																																							

19

KUZ'MENKO, P. P.

USSR/Solid State Physics - Systems, E-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34660

Author: Kuz'menko, P. P.

Institution: None

Title: Certain Features of Metal Alloys Based on the Iron-Group Elements

Original Periodical: Nauk. zap. Kiyvs'k. un-tu, 1955, 14, No 8, 91-104

Abstract: It is shown that the diagrams of state in the present-day form for the iron-chromium, iron-chromium-aluminum, and nickel-chromium systems do not fully correspond to the equilibrium state. High-temperature prolonged annealing changes the energy of the lattice (changes the equilibrium interatomic distance) and affects the behavior of the phase transformations at lower temperatures. For iron-chromium alloys it was observed that when they are annealed in the gamma region the properties of the gamma lattice change, while the properties of the same alloy remain unchanged in the α region. The author concludes that a possible strengthening of the lattice of alloys of this type by ionic interaction, as suggested by A. G. Lesnik, actually takes place. Using the results obtained, the author explains the facts observed for the above type of alloys and mentioned in the literature.

/ OF /

- 1 -

Kuz'menko, P.P.
USSR/Transformation in Solid Bodies.

E-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11771

Author : Kuz'menko, P.P.

Inst

Title : Connection Between Maximum Parameter of Nearest Order
and the Concentration for Typical Metallic Structures.

Orig Pub : Nauk, povidomlennya. Kiivs'k. un-tu, 1956, vyp. 1, 32-33

Abstract : A connection is pointed out between the maximum possible parameter of nearest order γ_m and the concentration for simple, volume-centered, face-centered cubic lattices and for lattices of hexagonal dense packing. It is noted that the calculation of the change of the alloy energy with concentration makes it possible to explain the dependence of the Curie point on the concentration for the system Cu-Al, the dependence of the heat of formations in the systems Fe-Al, Cl-Al, Ni-Al, etc.

Card 1/1

SOV/137-57-6-10971

Changes in Certain Physical Properties of Superalloys (cont.)

is decomposition occurring during annealing, thus bringing the alloys to approximate a state of equilibrium. The change in chemical composition is a secondary factor in influencing the properties of the alloys.

M.Sh.

Card 2/2

USSR/Transformation in Solid Bodies.

E-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11772

Author : Petrenko, P.V., Kuz'menko, P.P.

Inst : -

Title : Investigation of the Ordering in Fe-Al Alloys, by the Electric Resistance Method, Over a Wide Range of Concentrations.

Orig Pub : Nauk. povidomlennya Kiivs'k. un-tu, 1956, vyp. I, 34-35

Abstract : A study is made of the variations in the electric resistivity of ordered and disordered alloys Fe-Al, containing 16 -- 40 atomic percent aluminum over a wide range of temperature. The temperature curves were plotted by heating to 1200° and cooling at a rate of 2° per minute to room temperature. Hysteresis of ρ , with a maximum value for the alloy having 25% aluminum, was noticed in the temperature range from 100 to 360°. The relative variation in ρ differs for various alloys, and has a small value for the

Card 1/2

USSR/Transformation in Solid Bodies. "APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000928010

E-6

Abs Jour : Ref Zhur - Fizika, No 5, 1957, 11772

25% alloy, a minimum value for the 35% alloy (9500×10^{-5} ohms for room temperature and $10,500 \times 10^{-5}$ ohms at 1200°). The course of variation of ρ with the temperature for 16, 20, 30, 35, and 40% alloys is anomalous, the growth of slows down sharply at high temperatures, and in the case of 30 and 35% alloys, starting with 650 and 550°, ρ decreases. For the alloy with 25% aluminum one observes two maxima at 525 and 650°, and two minima at 580 and 840°. The electric resistivity of the hardened alloys is greater than that of the equilibrium alloys. The energy of activation is of ordering, calculated from the isothermal curves, amounts to 24,000 calories for the 25% alloy and 13,500 calories for the 30% alloy. Thus, the behavior of the curves cannot be explained by the influence of ordering and temperature alone. To explain the resultant curves the authors introduce the concept of the transition of the conduction electrons to the d-band as the degree of ordering of the alloys increases.

Card 2/2

KUZ' MENKA, P.P.

S/137/62/000/005/078/150
A006/A101

18.1240

AUTHORS: Kuz'menko, P. P., Kal'na, G. I.

TITLE: The dependence of heat capacity of alloys of the Cd-Mg system on temperature and concentration

PERIODICAL: Referativnyi zhurnal, Metallurgiya, no. 5, 1962, 17, abstract 51100 ("Visnyk Kyivs'k un-tu", 1958, no. 1, ser. fiz. ta khimiyi no. 1, 57-61, Ukrainian; Russian summary)

TEXT: The alloys were produced by melting Cd and Mg (both grades were "ch.d.a") in evacuated quartz ampoules; they were homogenized and subjected to gradual heat treatment whose nature varied depending on the Cd content in the alloys. Heat capacity was measured according to the Sayks-(Sykes?)-Gruzin method within a range of -50 to $+300^{\circ}\text{C}$ at a rate of 1.5 degrees/min, every $2 - 3^{\circ}$. The results obtained permit a more precise determination of the phase boundaries in the low-temperature range of the phase diagram of the Cd-Mg system; they determine the nature and the heat effects of transformations and indicate the fact that the heat capacity of Cd-Mg alloys is not subjected to the law of additivity in the high-temperature range. This is connected with the fact

Card 1/2

The dependence of heat capacity ...

S/137/62/000/005/078/150
A006/A101 .

that these alloys are not single-phase ones, or with changes in the interatomic bond at varying concentration. There are 17 references.

Z. Rogachevskaya

[Abstracter's note: Complete translation]

Card 2/2

24.6820

S/058/62/000/003/065/092
A061/A101

AUTHORS: Kuz'menko, P. P., Khar'kov, E. Y.

TITLE: Some methods of slitless radiography

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1962, 8-9, abstract 3E65
("Visnyk Kyivs'k. un-tu", 1960, no. 3, ser. fiz. ta khimiya, no. 1,
26-35, Ukrainian; Russian summary)

TEXT: Proceeding from the fact that, at small angles of slide, the focusing projection of X-ray tubes assumes the shape of a narrow slit, it is shown to be suitable to use the focusing projection of ordinary X-ray tubes for taking radiographs. To determine the range of applicability of slitless X-ray radiography, the additional broadening of radiographic lines in the conversion from ordinary to slitless X-ray radiography was calculated. The maximum of the radiographic lines is not displaced on the conversion to the slitless technique. The method under consideration permits the time of exposure to be reduced by 10-15 times. When microbeam pictures are to be taken, conical-shaped collimators with the cone vertex pointing to the specimen are suggested for use instead of narrow

Card 1/2

Some methods of slitless radiography

S/058/62/000/003/065/092
A061/A101

long slits. Chambers were worked out to obtain simultaneously reference radiographs for the line intensities of different specimens investigated.

L. Vigdorchik

[Abstracter's note: Complete translation]

Card 2/2

S/137/61/000/011/097/i23
A060/A101

AUTHORS: Khar'kov, Ye. Y., Kuzmenko, P. P.

TITLE: New high-sensitivity method for studying electric migration in metals and alloys

PERIODICAL: Referativnyi zhurnal, Metallurgiya, no. 11, 1961, 41, abstract 111277 ("Visnyk Kyivs'k. un-tu", 1960, no. 3, ser. fiz. ta khimii, no. 1, 36 - 42; Ukrainian, Russian summary)

TEXT: Two new methods for studying the electric migration in alloys and metals are described. Two cylindrical specimens with diameter 2.5 mm, length 4 mm, with polished butt surfaces are clamped in the holders of a special vacuum installation and are pressed to each other by the butt surfaces. After passage of the current heating up to the specimens, they are extracted and separated precisely along the same surface along which they had been joined before the experiment. From knowing the change in weight of the cathode and the anode halves of the specimen, caused by the passage of direct current, it is possible to determine the mass of the matter transferred. In the second method, one deposits a thin radioactive layer of a substance onto the polished butt ends

Card 1/2

New high-sensitivity method for studying ...

S/137/61/000/011/097/123
A060/A101

by which the halves of the specimen are joined. Under the passage of direct current at high temperature the radioactive substance migrates as result of thermal diffusion. Thereupon one applies the usual methods to determine the distribution of the radioactive gradient along the depth of the specimen after taking the halves apart along their initial joining surface. This yields the rate of electric migration. The results of studying the electric migration in commercially pure aluminum at 500 - 570°C are cited. There are 18 references.

Z. Fridman

[Abstracter's note: Complete translation]

Card 2/2

KUZ'MENKO, P.P.; KHAR'KOV, Ye.I. (Khar'kov, IE.I.)

Migration of silver during the flow of direct current through it.
[with summary in English] Ukr.fis.shur. 3 no.4:528-536 11-4s '58.
(MIRA Y1:12)

1. Kiyevskiy gosudarstvennyy universitet.
(Diffusion) (Silver)

PETRENKO, P.V.; KUZ'MENKO, P.P.

Some anomalies of the electric resistance of iron-aluminum alloys
with higher iron content [with summary in English]. Ukr. fiz. zhur.
3 no.6:820-828 N-D '58. (MIRA 12:6)

1.Kiyevskiy gosudarstvennyy universitet.
(Iron-aluminum alloys--Electric properties)

KUZ'MENKO, P.P.; KAL'NAYA, G.I. [Kal'na, H.I.]

Kinetics of phase transitions in alloys of the Cd - Mg system
[with summary in English]. Ukr. fiz. zhur. 3 no.6:829-835 N-D
'58.

(MIRA 12:6)

(Cadmium-magnesium alloys) (Phase rule and equilibrium)

KUZ'MENKO, P.P.; KAL'NAYA, G.I. [Kal'na, H.I.]

Regularities of the short-range order in alloys of the Cd - Mg system. Ukr. fiz. zhur. 3 no.6:841-845 N-D '58.

(MIRA 12:6)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Cadmium-magnesium alloys)

GEYCHENKO, V.V. [Heichenko, V.V.]; ZHMUDSKIY, A.Z. [Zhmuds'kyi, O.Z.],
doktor fiziko-matemat.nauk; KUZ'MENKO, P.P.; MAYBORODA, Ye.D.
[Maiboroda, I.E.D.]; MOGILA, A.P. [Mohila, A.P.], kand.filolog.
nauk, red.-leksikograf; LABINOVA, N.M., red.izd-vs; MATVIYCHUK,
O.O., tekhn.red.

[Russian-Ukrainian physics dictionary] Russko-ukrainskii fizicheskii
slovar'; 16000 terminov. Sost.V.V.Heichenko i dr. Kiev, 1959.
212 p. (MIRA 13:6)

1. Akademiya nauk USSR, Kiyev.
(Russian language--Dictionaries--Ukrainian)
(Physics--Dictionaries)

KHAR'KOV, Ye.I.; KUZ'MENKO, P.P.

Electric migration of iron and aluminum in iron-aluminum alloys.
Ukr. fiz. zhur. 4 no.3:389-398 My-Je '59. (MIRA 13:2)

1.Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Iron-aluminum alloys--Electric properties)
(Ions--Migration and velocity)

KUZ'MENKO, P.P.; KHAR'KOV, Ye.I.

Electric migration in solid aluminum. Ukr. fiz. zhur. 4 no.3:401-402
My-Je '59. (MIRA 13:2)

1.Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Aluminum--Electric properties)

Kuz'menko, P.P.; Petrenko, P.V.

Certain anomalies in the properties of iron-aluminum alloys and
their nature. Ukr.fiz.shur. 4 no.4:497-503 J1-Ag '59.
(MIRA 13:4)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.
(Iron-aluminum alloys)

KHAR'KOV, Ye.I. [Khar'kov, I.E.I.]; KUZ'MENKO, P.P.

New methods of studying partial coefficients of diffusion and
electrical transfer in binary alloys. Ukr.fiz.zhur. 4 no.4:
534-537 J1-Ag '59. (MIRA 13:4)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.
(Alloys) (Diffusion)

KUZ'MENKO, P.P.; KHAR'KOV, Ye.I. [Khar'kov, I.E.I.]

Electrical transfer in Cd and Zn. Ukr.fiz.zhur. 4 no.4:
537-539 J1-Ag 59. (MIRA 13:4)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.
(Cadmium) (Zinc)

S/185/60/005/003/018/020
D274/D303

AUTHORS: Khar'kov, Ye.Y. and Kuz'menko, P.P.
TITLE: Electrical mass transfer in Sn, Pb, Ag and Cu
PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 5, no. 3, 1960,
428-429

TEXT: Mass transfer in Sn, Pb, and Cu was investigated by a method which involves changes in the weight of the cathode and anode parts of the specimen after passage of direct current. Mass transfer in silver was investigated by the same method as well as by means of radioactive isotopes. Denoting the change in mass of one of the halves of a specimen by Δm , the absolute transfer-velocity is found

$$v = \frac{\Delta m}{\rho S t}, \quad (1)$$

where ρ is the density, S - the cross section of the specimen,
 t - the duration of current flow. Owing to the fact that mass

Card 1/3

Electrical mass transfer...

S/185/60/005/003/018/020
D274/D303

transfer in metals is mainly determined by the character of the relationship between absolute velocity and the electric field-strength E , special attention was given to obtaining the dependence of v on current density i , at a given temperature. The investigations of all 4 metals showed that in all cases the mass is transferred to the anode. Two figures are given for Sn, Pb, Ag, which show that, within experimental error, the relationship between v and i is linear for a wide range of values of i . A table is given with the results for copper, which shows that for temperatures of 900 - 1000°C, the copper is transferred to the anode. The results obtained by H. Weaver (Ref. 5: Z. Elektrochem. 60, 1170, 1956) for copper do not agree with the results of the present investigation. A table is given with the mean values of F/eE for the investigated metals; the resultant force F which causes the transfer, was determined from

$$v = \frac{D}{f k T} F, \quad (2)$$

where D is the coefficient of self-diffusion, k - the Boltzmann constant, T - absolute temperature, f - a factor close to unity. The

Card 2/3

Electrical mass transfer...

S/185/60/005/003/018/020
D274/D303

values of D for Cu, Pb and Sn, were taken from V. Zayt (Ref. 6: Diffuziya v metallakh (Diffusion in Metals), 1958). The obtained experimental results are apparently confirmed by theory, as per V.B. Ficks (Ref. 8: Fizika tverdogo tela (Solid State Physics), v. 1 16, 1959). There are 2 figures, 2 tables and 8 references: 6 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: E. Compaan, L. Harren, Trans. Farad. Soc., 52, 786, 1956.

ASSOCIATION: Kyivsk'ky ordena Lenina derzhavnyy universytet im. T.G. Shevchenka (Kiyev Order-of-Lenin State University im. T.G. Shevchenko)

SUBMITTED: January 9, 1960

Card 3/3

24.6200

1160 1482 1163
26601

S/185/60/005/003/019/020
D274/D303

AUTHORS: Kuz'menko, P.P. and Khar'kov, Ye.Y.

TITLE: Determining the degree of ionization of atoms in crystal lattices by the method of mass transfer

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 3, 1960, 430-431

TEXT: Mass transfer is caused by the resultant force $F = F_1 + F_2$, where F_1 denotes the action of the electric field D on an ion of charge q , and F_2 - the force of electron "wind" which arises as a result of momentum transfer in electron scattering by ions. The absolute velocity of mass transfer is

$$v = \frac{D}{FkT} F, \quad (1)$$

(the notations being similar to those of the preceding article). For a pure metal, the following equation holds (provided that the degree of ionization q of an activated ion is similar to that of a

Card 1/4

26601

S/185/60/005/003/019/020

Determining the degree of ionization... D274/D303

normal ion):

$$\frac{v}{eE} = \frac{D}{fkT} q \left(1 - \frac{\sigma^*}{\sigma} \right). \quad (2)$$

where $\sigma = 1/n_a l$ is the mean scattering cross-section of electrons in the metal, n_a is the ion concentration, σ^* is the scattering cross-section of the activated ion; from N.F. Mott and M. Jones (Ref. 4: The theory of the properties of metals and alloys, 1936) one obtains:

$$\sigma^* = \int_0^\pi (1 - \cos \theta) \left[\frac{2\pi m}{h^2} \int \psi_k^* V(r) \psi_k dr \right]^2 2\pi \sin \theta d\theta, \quad (3)$$

where θ is the scattering-angle, ψ_k is the wave function of the electron, V is the potential difference of ions of solute and solvent. By the Thomas-Fermi method, one obtains for V :

$$V = \frac{ze^2}{r} e^{-\beta r}$$

where z is the charge difference between base and impurity. Integrating Eq. (3) one obtains

$$\sigma^* = \frac{\pi}{2} \frac{e^2 z^2}{\epsilon_0^2} \left\{ \ln \left(1 + \frac{1}{y} \right) - \frac{1}{1+y} \right\} \quad (4)$$

Card 2/4

Determining the degree of ionization... ²⁶⁶⁰¹ S/185/60/005/003/019/020
D274/D303

where ξ_0 is the Fermi energy and

$$\frac{1}{y} = \frac{4m^2 v_F^2}{\beta^2 \hbar^2} = 5,1 \cdot 10^{-8} n_a^{1/3} q^{1/3}$$

Eq. (4), obtained by Mott (Ref. 4: Op. cit) for the cross-section of the impurity ion, can be used for calculating the cross-section of the activated ion. For this purpose z had to be considered as the charge q of the activated ion, and not as a difference of charges. Solving Eqs. (2) and (4), and knowing v , D and T from other investigations, the ion charge q can be calculated. A table is given with the values of q for Ag, Zn, Cu, Sn, Pb, Cd, calculated by the above method; the experimental values of v , E , D , T were taken from references. It is evident from the table that the value of q for Ag corresponds to the value obtained by optical methods. For Cu, the value of q corresponds to that obtained theoretically (Ref. 4: Op. cit). For Pb, the value of q is of the same order as that obtained by W.B. Pearson (Ref. 9: Canad. Journ. Phys., 36, N 5, 1958). There are 1 table and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publica-

Card 3/4

26601

Determining the degree of ionization... S/185/60/005/003/019/020
D274/D303

tions read as follows: K. Compaan, L. Harrenl, Trans. Farad. Soc.,
52, 786, 1956; N.F. Mott, M. Jones, The theory of the properties
of metals and alloys, 1936; W.B. Pearson, Canad. Journ. Phys., 36,
N 5, 1958. X

ASSOCIATION: Kyivskyy derzhavnyy universytet im. T.G. Shevch-
enka (Kiyev State University im. T.G. Shevchenko)

SUBMITTED: January 9, 1960

Card 4/4

KUZ'MENKO, P.P.; KHAR'KOV, Ye.I. [Khar'kov, IE.I.]; GRINEVICH, G.P.
[Hrinevych, H.P.]

Diffusion and electrical transfer in the AgZn alloy. Ukr. fiz. zhur.
5 no. 5:683-688 S-O '60. (MIRA 14:4)

1. Kiyevskiy gosudarstvennyy universitet.
(Diffusion)
(Silver-zinc alloys)

KUZ'MENKO, P.P.

Determining the charge of an ion in a solid pure metal according to the electrical resistance of thermal vacancies. Ukr. fiz. zhur. 5 no. 5:720-722 S-O '60. (MIRA 14:4)

1. Kiyevskiy gosudarstvennyy universitet.
(Ions)

KUZ'MENKO, P.P.; KHAR'KOV, Ye.I.

Experimental determination of component charge in heat-resistant alloys of the system Fe - Al. Issl. po zharopr. splav. 6:112-119 '60. (MIRA 13:9)
(Iron-aluminum alloys--Electric properties)

32079

S/181/61/003/012/014/028

B104/B102

94.7400 (1055, 1454, 1555)

AUTHORS: Gorid'ko, N. Ya., Kuz'menko, P. P., and Novikov, N. N.

TITLE: Mechanical properties of germanium as a function of carrier concentration

PERIODICAL: Fizika tverdogo tela, v. 3, no. 12, 1961, 3650 - 3656

TEXT: The variation in microhardness of the surface layer of germanium with varying concentration of free carriers has been studied. The microhardness was measured with a ПМТ-3 (PMT-3) instrument at loads of 3 - 5 g. The indentations were measured with an immersion objective (2000x) in order to reduce the error in measurement. The carrier concentrations were changed by irradiating the germanium surface with light of varying intensity. 300-w motion-picture lamps circularly arranged at a distance of 10 cm from the specimen were used for the purpose. A maximum light intensity of 50,000 lux was reached. It was lowered by removing some reflectors and lamps. Fans prevented the specimens and lamps from heating. The carrier concentration was also changed by carrier injection from point

Card 1/2 Z

Mechanical properties of ...

32079
S/181/61/003/012/014/028
B104/B102

contacts. For this purpose, a plate with probes was attached to the PMT-3 instrument in such a way that the probes were regularly arranged around the point where the indenter penetrated into the specimen. Preliminary experiments have shown that at a stress of 3 - 5 g the indentations are entirely in the layer (1 - 2 μ) where the photomechanical effect occurs. The experiments have indicated that the variation in hardness of the germanium specimen is due to the variation in carrier concentration (Fig. 2), no matter how the carriers are introduced into the semiconductor. The variation in hardness must therefore be related to a variation in dislocation density or mobility. It is concluded from the results that it is the dislocation mobility that varies. After irradiation with 40 - 50,000 lux for several hours, the properties of the surface layer passed over into a new state, in which the indentations were surrounded by bright and dark rings ("aureoles") which vanished after holding at room temperature or in boiling water for several hours. The aureoles are now being examined. V. N. Dobrovel'skiy is thanked for discussions. There are 5 figures, 1 table, and 5 references: 1 Soviet and 4 non-Soviet. The three references to English-language publications read as follows: G. C. Kuczinski and

Card 2/4 2

18.8100

25492
S/185/61/006/001/008/011
D210/D305

AUTHOR: Kuz'menko, P.P.
TITLE: Estimating the effective charge of small admixtures to a metal by the residual resistance
PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 1, 1961, 116-120

TEXT: This is a theoretical study, based on the works of I.O. Linde (Ref. 1: Ann. der Physik 14, 25, 1932) and that of N.F. Mott (Ref. 4: The Theory of the Properties of Metals and Alloys, Oxford 1936). Linde showed that the magnitude of residual resistance $\Delta\rho$ of a metal, to which a small quantity (1 at %) of another element is added depends on ΔN^2 , N being the numeric difference of chemical groups to which both the basic metal (solvent) and the added element (solute) belong. The dependence is a linear one. Mott stated that the residual resistance $\Delta\rho$ is related to the dispersion area of electrons on the ions of the added element.

$$\Delta\rho = \frac{mv_F}{e^2} \cdot c \cdot \quad (1)$$

Card 1/3

25592

S/185/61/006/001/008/011
D210/D305

Estimating the effective charge...

where c - concentration of solute ions, m , e the mass and charge of the electron, v_f - Fermi's velocity of electrons in metal, σ - cross-section of the dispersion area of the solute ion. This cross-section σ is defined by Mott as:

$$\sigma = \frac{\pi}{2} \frac{e^4 z^2}{\epsilon_0^2} \left[\ln \left(1 + \frac{1}{y} \right) - \frac{1}{1+y} \right], \quad (2)$$

where $\frac{1}{y} = 5.14 \cdot 10^{-8} n^{\frac{1}{3}}$, n being the number of valency electrons in a unity of volume. ϵ_0 - Fermi's energy of the solvent in ev, z - the charge difference of the solvent and solute ions. In the author's opinion, it follows from this equation that the cross-section σ depends ultimately on the difference of effective charges of ions of the solvent and those of the solute and that the latter may differ from the number of the chemical group to which the solute belongs. The author calculated from the residual resistances the cross-sections σ of different admixtures to copper, silver, gold and aluminum, and their respective effective charges " Z_{ef} ", the admixtures being: Li, Mg, Zn, Cd, Hg, Ga, In, Tl, Ti, Ge, Sn, Pb, As, Sb, Bi, Cr, Mn,

Card 2/3

Estimating the effective charge...

S/185/61/006/001/008/011
D210/D305

Fe, Co, Rh, Ni, Pd, Pt. The values of residual resistances were taken from the works of Linde (Ref. 1: Op. cit) and that of A.Ye. Vol (Ref. 5: Stroyeniye i svoystva dvoynykh metallicheskih sistem (Structure and Properties of Binary Metallic Systems) v. 1 1959). The values of ξ_0 and those of Z_0 (charges of solvent ions) were taken from Mott (Ref. 4: Op. cit) and from a previous publication of the author (Ref. 6: UFZh. 5, 157, 1960). The charge of the aluminum ion in solid aluminum was theoretically estimated as not larger than 1.95. There are 1 figure, 5 tables and 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc. The reference to the English-language publication reads as follows: N.F. Mott, H. Jones, The Theory of the Properties of Metals and Alloys, Oxford 1936.

ASSOCIATION: Kiyivs'kyi ordena Lenina derzhavnyy universitet im. T. H. Shevchenko (Order of Lenin State University of Kiev im. T. H. Shevchenko) ✓

SUBMITTED: May 30, 1960

Card 3/3

KUZ'MENKO, P.P.; GROM, V.S. [Hrom, V.S.]

Electrical transfer of gold in solid gold. Ukr. fiz. zhur. 6
no.1:140-142 Ja-F '61. (MIRA 14:6)

1. Kiyevskiy ordena Lenina gosudarstvennyy universitet im.
T. G. Shevchenko.

(Cold)
(Ions)

KUZ'MENKO, P.P.; OSTROVSKIY, L.F. [Ostrovskiy, L.F.]

Electric transport of small admixtures of zinc and ~~silver~~ in
solid aluminum. Ukr. fiz. zhur. 6 no.4:525-530 J1-Ag '61.

(MIRA 14:9)

1. Kiyevskiy gosudarstvennyy universitet im. Shevchenko.
(Mass transfer)

KUZ'MENKO, P.P.; SUPRUNENKO, P.A. [Suprunenko, P.O.]

Effective Ni and Al charges in a NiAl alloy. Ukr. fiz. zhur.
6 no.4:572-574 J1-Ag '61. (MIRA 14:9)

1. Kiyevskiy gosudarstvennyy universitet im. T. Shevchenko.
(Nickel--Aluminum alloys)

S/185/61/006/005/019/019
D274/D303

AUTHOR: Kuz'menko, P.P.

TITLE: On determining ion mobility in solid metals by the method of radioactive isotopes

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 5, 1961, 712 - 714

TEXT: Determination of ion mobility reduces to the study of diffusion in the presence of an electric field. Ion mobility in solid metals is related to diffusion from a non-constant source. Assume thin layers of the substance, whose diffusion is investigated, are applied to the end surfaces of polished cylindrical specimens. The active surfaces of the specimens are fixed to the electrodes of a vacuum device. A direct current heats the contact surface to diffusion temperature, T . The diffusion equation, in the presence of the field, is

$$\frac{\partial n}{\partial t} = D \frac{\partial^2 n}{\partial x^2} - D \frac{F}{kT} \frac{\partial n}{\partial x} \quad (5)$$

Card 1/3

On determining ion mobility ...

S/185/61/006/005/019/019
D274/D303

and its solution

$$n = \frac{Q}{2\sqrt{\pi Dt}} \exp \left[-\frac{(x - \frac{DF}{kT} t)^2}{4Dt} \right], \quad (6)$$

where n is the concentration of the radioactive atoms, Q - the initial amount of radioactive substance, x - the depth of penetration (from the contact surface), F - the force due to the electric field. To maximum activity, there corresponds the coordinate ✓

$$x_0 = \frac{D}{kT} Ft. \quad (7)$$

The quantity $x_0/t = v$ is called ion mobility. With respect to the surface which is at a distance x_0 from the contact surface in the direction of the force, the diffusion coefficient in the direction of the field equals that in the opposite direction, and is equal to the diffusion coefficient in the absence of the field. These conclusions were experimentally confirmed. Thus, in order to determine the ion mobility, it is necessary to determine the displacement x_0 with respect to a system of coordinates, whose state of motion dif-

Card 2/3